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Identification of Formative Ideas in Architectural Design Strategy for Spatial and Environmental Benefits

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ABSTRACT

This study aims to identify the criteria for formative ideas in architectural design strategies that have spatial and environmental benefits. Architecture is very close in the Islamic world, where architecture is expected to have an essential role in spatial design by paying attention to aesthetic, cultural, social, environmental, structural, and philosophical values. The study method begins by gathering variations of definitions from elements of architectural design strategies that have an essential role as spatial design prefixes. The next stage is the identification of formative ideas in the approach that has values of benefit. In general, this strategy has an output as the design direction of each element to be applied in building development. The results of this study are formative ideas design criteria that have benefits in developing architectural design strategies, including those based on each element, namely cultural and artistic studies, social studies, environmental studies, technical studies, and design studies. This paper also tries to link it to several examples of the implementation of Islamic values in spatial and architectural concepts.
KEYWORDS: Design strategy, Architectural topics, Islamic values, Usefullness.

INTRODUCTION

Architecture has an essential role in the formation of a space and its environment. The area and climate that is formed are strongly influenced by architectural ideas that can provide recommendations for problems. This recommendation is influenced by structural design programs that are sustainable and up to date, so it is demanded to be relevant according to the era. In creating a useful space, architectural design strategies are needed that can provide positive space [1]. The first design strategy is achieved by considering cultural and artistic studies; these studies develop with attention to the elements of beauty and community for architectural space. The second study is social studies; these studies pay attention to aspects of user functions ranging from activities, circulation, and behavior patterns. The third study is environmental studies; these studies pay attention to ecological elements that have an impact on urban elements. The fourth study is technical studies; these studies consider the aspects of revival and service delivery. The fifth study is design studies; these studies develop theory development with several architectural approaches [2]. In the Islamic world, architecture provides a role in the event of civilization. Among them, in terms of aesthetics, culture, structure, environment, all have a role in the development of architectural science. The creation of architectural space in Islam has the benefit of the situation by providing positive space for its users, namely space that can be useful for others [3]. In the Qur'an and Hadith, many words are said to "build." That shows that there are several principles for development activities in Islam.

For this reason, Muslim architects should apply Islamic architecture as a basis for the design. The building arranges suitable social, technical, economic, and psychological arrangements that can reflect the Qur'an and the Hadith. In designing it is recommended to follow the five steps of creating architecture that is function, form, technical, safety, and comfortable [4].

In the era of modern design that tends to adopt the form follow function and form follow finance, the gait of Muslim architects is also inseparable from the influence of both understandings. This condition is not thoroughly followed by expanding the design perspective using the perspective of Islamic teachings, in which case the researcher uses the term Follow Fiqh terminology. Muslim architects did make the Al-Qur'an and Hadith or out of context both as a basis for designing and then try to make an effort to interpret and add to it all by producing based assumptions (for example, interpretation) and their premises. But unfortunately, the results of experiments are only in the form of things that are philosophical/philosophical. The results of the design are not able to be captured and interpreted by the wearer, whereas the architect's goal is that the user of the model is psychologically affected in carrying out activities in it, both consciously or not [5].

Local wisdom is interpreted with knowledge in using ideas of equality, in other words, in harmony with the value of locality [6]. A formative idea is understood to be a concept which a designer can use to influence or give form to design. The plans offer ways to organize decisions, to provide order, and to consciously generate form. By

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engaging one formative idea instead of another, a designer begins to determine the precise result and how it will differ from other configurations. The use of different ordering ideas may generate different results. Generally, diagrams developed in the analysis section are supplemented with other examples to illuminate a formative idea. Formative ideas in architecture have various models, including Geometry, Additive, and Subtractive, Symmetry, and Balance, Hierarchy, Natural light, Circulation to use-space, Relationships of a plan to section, Massing, Unit to the whole, Repetitive to unique, Structure. This is a physical manifestation in developing architectural designs [7].

MATERIALS AND METHODS

This paper informs the development of useful design strategies for spatial and environmental design by identifying formative ideas in the application of architectural design [8]. This study explores, describes, and understands the meaning of each design strategy applied [9]. The stages of this study can be seen in **Figure 1**.

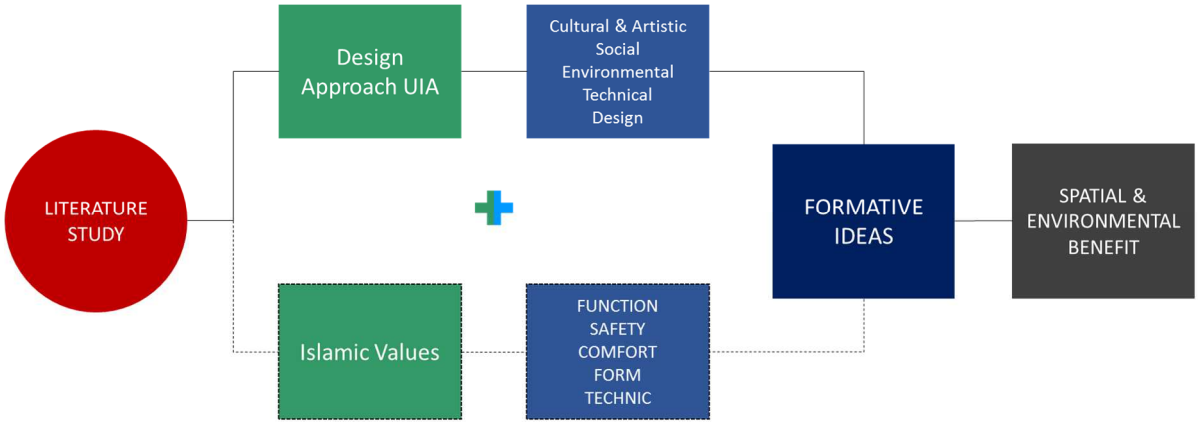

Figure 1. **Development of study method**

In this study, the development of literature is done by describing the definitions and keywords of topics that exist in each design strategy. Then proceed by adding Islamic values in the design strategy. After getting the keywords in each design, the procedure is continued by connecting the meanings of each component in the formative ideas. The Islamic values contained in the definitions and keywords will be included as benefits for spatial and environmental design. This method is done by adding real problem-based in each design strategy because the basis in architectural design is based on the issue or problem to look for problem-solving [10]. In terms of curriculum design, the nature and types of issues to be used as the triggers for learning in architectural problem based learning pedagogical approaches should be thoroughly researched and developed, for relevance, before the commencement of the problem based learning implementation [11]. As different disciplines have different definitions or constitutions of issues, the proposed architectural items to be used in architectural problem based learning approaches should be based on both educational and professional architectural contexts, and take into consideration how architects think [12]. The stages of searching for formative ideas can be seen in figure 2.

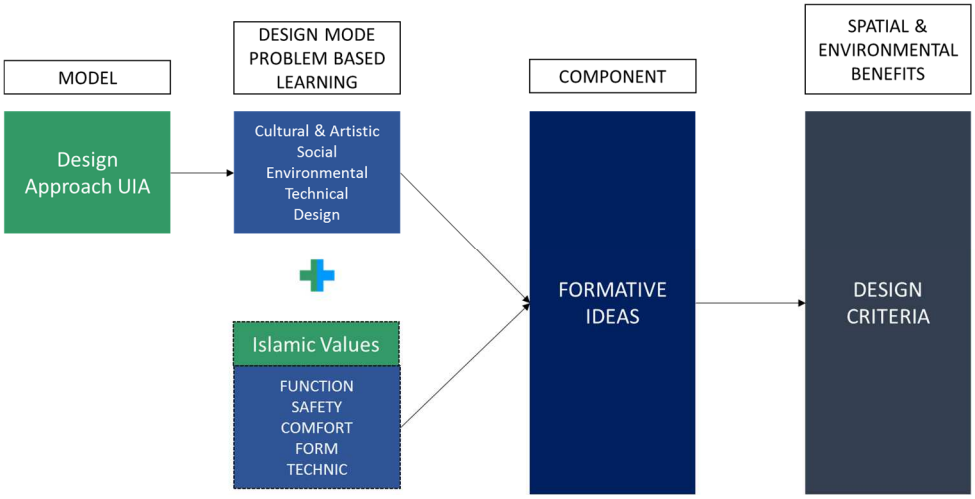

Figure 2. Analysis model based on problem based learning

Analysis model based on problem-based learning in the architectural design studio is the critical approach in architecture pedagogy. Because of that approach, we can have three crucial necessary skills: complex problem solving, critical thinking, and creativity.

RESULTS AND DISCUSSION

The real-based problem learning at the architectural design strategy can be arranged based on the design approach of the International Union of Architects (UIA). The real-based problem that becomes the case in architectural design strategy can be developed not only as problem-solving but also the way of design method or design solution as critical thinking. The new method or new solution can be predicted by simulation software or use another technology. The results from the architectural design strategy can be used for the community service case for validation. This is the progressive loop system at Architectural Design Studio, not closed-cycle systems [8]. The stages of elaborating the definition can be seen in figure 3. Definition of architectural design strategies.

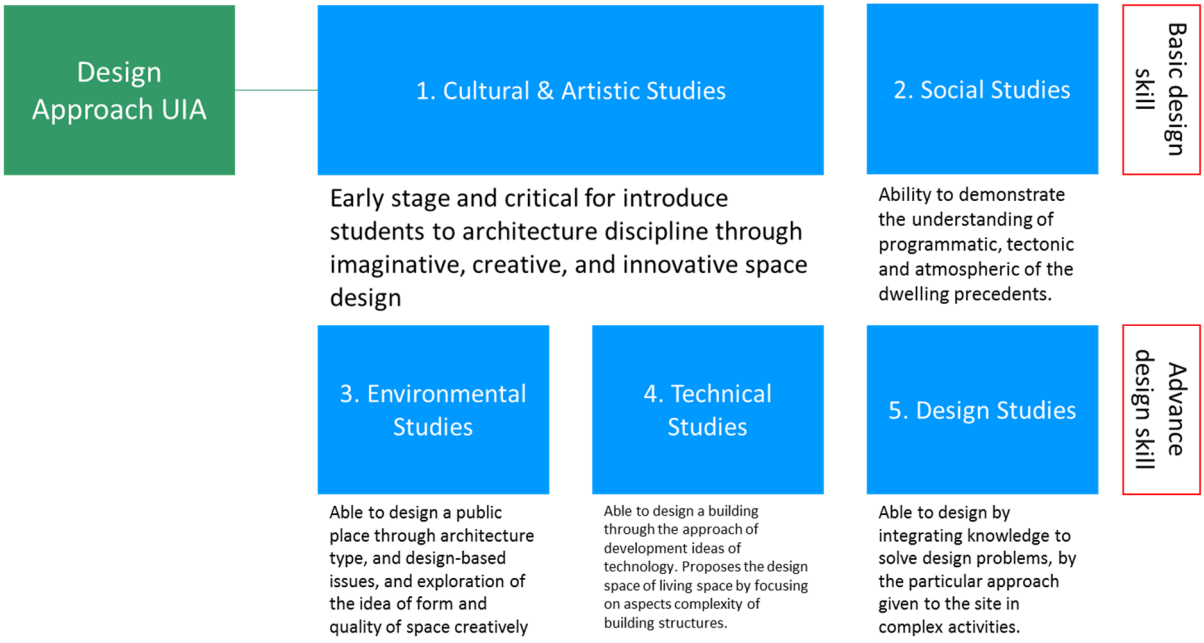

Figure 3. Definition of architectural design strategies

Cultural and Artistic Studies

The initial stage of design is to introduce students to architectural design disciplines imaginatively, creatively, and innovatively to introduce the function of interior and exterior spaces. Knowledge of the function of this space is the basis of personal space experience, the interaction between users with the quality of space, and understanding the environmental context. Design activities consist of gathering information, defining problems, analyzing information, and making simple decisions to formulate design strategies related to spatial functions. The emphasis on architectural principles as aesthetic and architectonic compositions is reinforced by inspiration from art and nature. Aims to understand life problems in the context of the community so that these problems can be solved through design. Design knowledge includes comprehensive observation and analysis based on physical and social contexts. The development of ideas from the creation of spatial quality is formulated in a structured manner, and the basis of the spatial program can be well integrated from the initial idea proposal. The result of the output is to produce a simple single form composition Aesthetically & proportionally by exploring the form with the consideration of simple structural logic and material and paying attention to aspects of culture to apply the basic elements of the structure, base, walls, and top cover.

Social Studies

The design phase is to introduce students to the daily activities of a family. Aiming at understanding the problems of life in the family so that these problems can be resolved through the shelter that can be spatially accommodated not only for the present but continues. The design idea will be developed based on a thorough exploration of how privacy and interaction are connected to a good spatial element and responds to residential scenarios for the whole family precisely and proportionally. The result of the output is to produce a complex single-form composition

with character, specific function space configurations that can choose the right structural system and simple building material.

Environmental Studies

The design stage is to introduce students to the public space based on current issues and explore the quality of ideas creatively. Aims to understand the problem of the complexity of socio-cultural spaces in commercial space settings with a contextual approach. Design knowledge includes the meaning of public space, function typology, organization, and the concept of commercial, public buildings. Site & Environmental, architectural context: physical (access, topography, climate, vegetation, fauna, sensory (noise, view, smell), utility). Non-physical (architectural style, social, cultural, political (regulation). The output is to produce a plural form composition as a response to internal and external factors of the site that can process multiple masses in contoured land with building structures 1-4 floor.

Technical Studies

Generate vertical living space designs that focus on aspects of the complexity of building structures, including wide spans and tall buildings. Idea development refers to the iconic design because of its relevance to the city / urban context. Design knowledge includes an explanation of the physical environment of a site and consideration of design sustainability. The focus of this study is the design of vertical (multi-story) private and various functions (mixed-use) that address environmental issues, commerciality, urban linkage, structure, and utility of buildings and sites. The result of the output is to produce a vertical/horizontal singular/plural form composition by the structure with consideration of the efficiency and stability of the building which can choose and design a structural system and vertical and wide span building.

Design Studies

Aiming at producing object issue designs with an emphasis on critical thinking (Design Thinking) by defining independently developed design concepts to create exterior and interior design configurations. Formulating the design principles in a structured, referential, tectonic way to produce output design solutions through learning and teaching in the studio that provides opportunities for intensive coaching and collaboration. The result of the output is to produce a single/plural building design with specific themes, approaches, methods, and concepts that can apply structural and construction systems by the design complexity.

Furthermore, in the formulation of a design strategy within the framework of Islamic architecture, it will indeed encounter a few obstacles, because each case approaches and treatments must be different, as is the case with other design methods. Sometimes these methods have to undergo changes, reductions, and additions, and some methods are standard but flexible in their use. However, several ways are already quite reliable and tested. In general, these methods have three subjects, namely the environment, humans, and buildings [8]. Therefore, the design method in Islamic architecture should be a method that is a tool that has a strong influence on the aspects discussed in helping the process of determining priorities and also in making decisions in design. The results of formative ideas in the context of necessary design skills can be seen in Figure 4, and advance design skills can be seen in Figure 5.

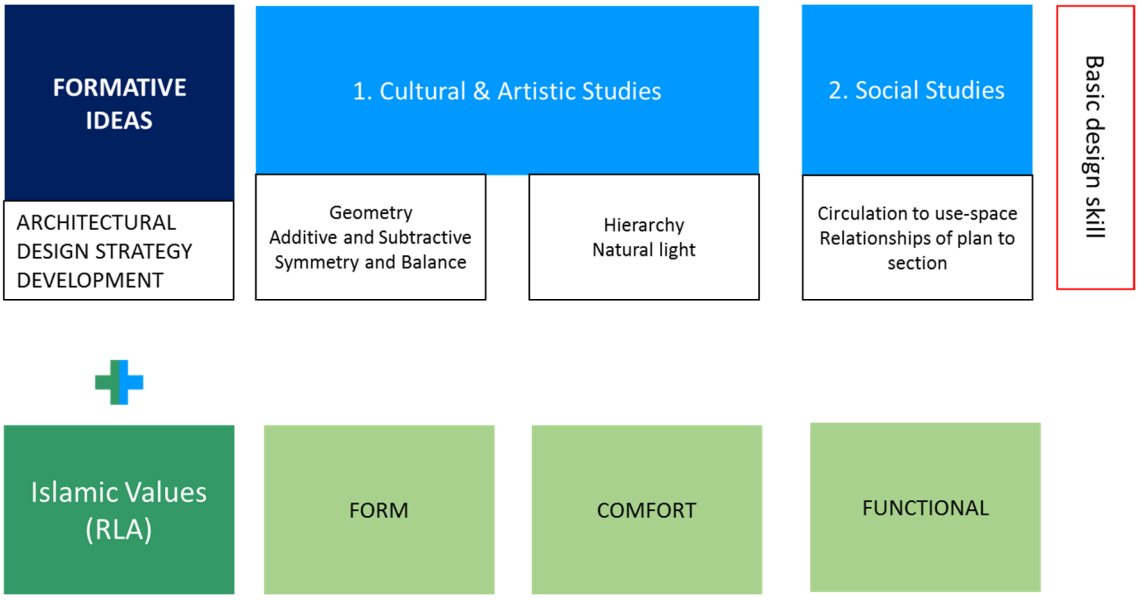

Figure 4. Formative ideas in the context of basic design skills

Formative ideas formed from the first studies of cultural and artistic are geometry, additive, and subtractive symmetry and balance. Keywords that develop from this are Sensory, Experience, Aesthetic, Creative, Usability, Community, Lifecycle, Cultural, Dwelling. Architecture knowledge encompasses basic comprehension about the meaning and personal space experience, the interaction between the human body and quality space, then understanding the site and environment context as experienced by the human body. Design activity consists of series of events from gathering information, defining problems, analyzing, and making critical decisions for formulating action strategies toward personal space, ability to think in a three-dimensional way through space design exploration, also communicating design ideas.

The second study is social. Circulation to use-space, Relationships of a plan to section. Critical problems about living space in urban community contexts, through dwelling design. Design knowledge includes dwelling meaning comprehension, observation, and analysis of playing social groups, understanding in the physical and social context in design, development of ideas of space quality creatively, the formulation in an organization and program space that be the base of integrated space development ideas, that communicated professionally — understanding of programmatic, tectonic and atmospheric of the dwelling precedents. The clarity on understanding the design ideas and processes of each pattern is essential in this project. The students are expected to implement the design ideas into a further creative exploration of remaking and recomposing the design ideas through such models and diagrams. They are highly developed to develop a unique and innovative way into consideration to recompose design excellence. The dwelling scenario should incorporate the ideas of growth as part of the everyday living of the family, with spatial implications not only for the present but also for further years. It also needs to include ideas of contemporary living aspects that are relevant to the family (lifestyle, technology, etc.). The design should demonstrate the integration of programmatic, tectonic, and atmospheric approaches into a whole design scheme. Design ideas will be developed based on a thorough exploration of how these three approaches are interconnected and materialized into spatial elements, responding appropriately to the family dwelling scenario.

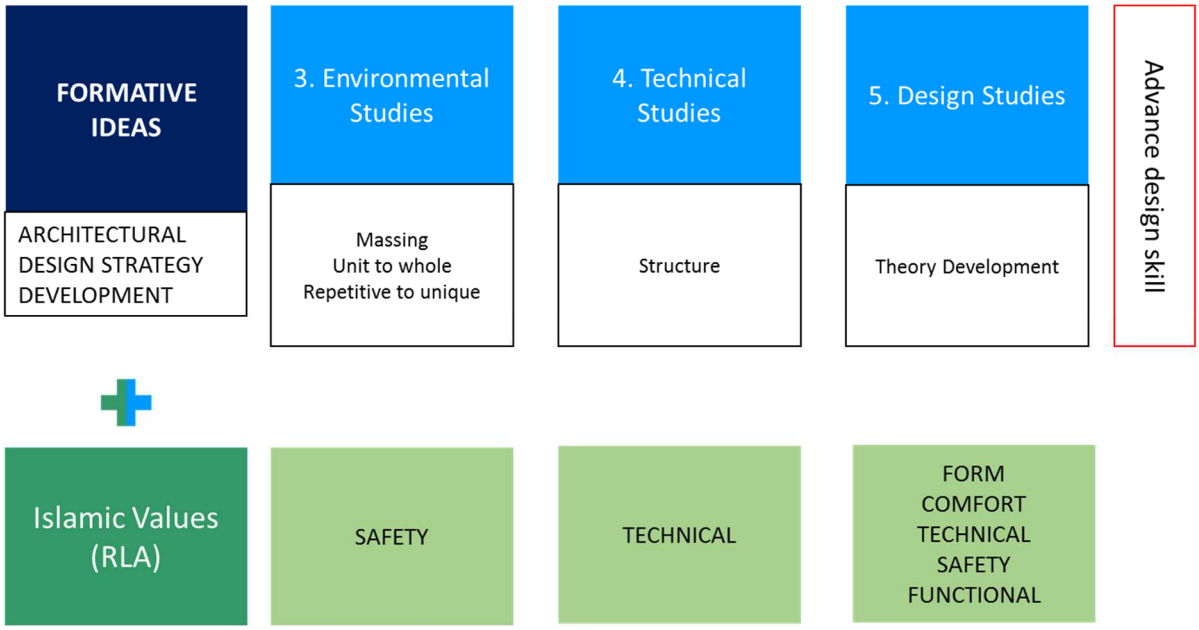

Figure 5. Formative ideas in the context of advance design skills

Furthermore, the third study, namely environmental, is Massing. Unit to the whole, Repetitive to unique. Critical problems about human living space with socio-culture complexity in commercial space settings with an approach in exploration form ideas and issue-based. Design knowledge includes public meaning comprehension, functional type breakdown, program and organization space, keyword development, commercial, public building concept and its explanation in space design, formulation of initial statements that issue-based, program development, and its interpretation in space design. A design work, which requires their ability to integrate main aspects: architecture, urban contexts, structure, building services, and communication.

The fourth study, namely technical studies, is structure. The design space of living space by focusing on aspects of the complexity of building structures. Knowledge of the design includes the development of the idea of portable architecture in response to conditions of disaster or other special requirements, as well as the development of the concept of an iconic design in the urban context. Knowledge of site and environmental context includes an explanation of the design through an understanding of the physical conditions of the site and its urban context and

sustainability considerations. They are focused on the experimentation of structural logic and construction methods. There are some aspects that students need to consider in the development of ideas: the use of materials, methods of construction, details, joints, and assembly, modes of transport, and cost of production. Some sustainability strategies also need to be demonstrated in the design proposal. At the end of the project, the students will need to communicate their ideas both for the users and for the construction agents involved.

The fifth study is design studies is the theory development of each formative ideas that have been learned from the first studies and the fourth. Making a place alive is not merely talking about "appearance," but, in a broader term, it is about "presence." The latter involves not only physical and visual quality but also the intangible quality of a place, such as psychological attachment with the people. That students have to propose a project, encompassing the conditions mentioned above without being engulfed with the romanticism of the past. The project must introduce a new concept of how the past sustains to live as an integrated entitlement between the present and future existence. Formulate principles of information structure, and tectonic principles of the following construction detail ME and utilities. Presenting outcomes and maintaining all the design solutions in the presence of internal and external reviewers.

CONCLUSION

Usefulness informative ideas in each study strive to be correlated with Islamic values that can provide positive space for the environment. The criteria obtained informative views can be used as the development of architectural design topics. On the other hand, there is one thing being a specificity in the concept of Islamic values that results in philosophy and tradition that cannot be avoided, and there should be, namely the existence in an educational architecture environment.

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